



**National
Aerospace
Laboratories**

Class **Unrestricted**

No. of Copies 6

Title *Efficiency of Multi-beam Linear and Planar Phased Antenna Array in Suppression of Wideband Radars*

Author/s Arpana Saad, Hema Singh, R M Jha

Division ALD

NAL Project No: FAC-00-01-06

Document No. PD AL 0804

Date of issue Nov. 2008

Contents Pages Figures ☒ Tables References

External Participation Nil

Sponsor x

Approval Head, ALD

Remarks x

Keywords Multi-beam phased antenna array, probing sources, bandwidth, spectral lines, correlation, suppression, adapted pattern

Abstract

In the present work, performance of the multi-beam phased antenna array in the presence of multiple desired signals and probing sources has been analyzed. The modified improved LMS algorithm is used to generate adapted pattern of antenna array with prescribed nulls and multi-lobe beamforming. Both the linear and planar geometric configurations are considered. The projection vectors and the complex weight coefficients are estimated by imposing the point constraints that both the number and directions of the main lobes should correspond to the desired ones. Results for very large phased antenna array are also presented. It is shown that the large antenna array along with the efficient algorithm is capable of maintaining the main lobes and simultaneously suppressing the multiple probes. The effect of correlation among the impinging signals is taken into account by employing matrix reconstruction algorithm. Simulations are performed for both narrowband and wideband probing sources. The simulated adapted pattern demonstrates the efficiency of the antenna array in decorrelating the signals and suppressing the probing effect.